

# Notice of Allowability

Application No.

09/815,274

Examiner

Ayal I. Sharon

Applicant(s)

KRUGER ET AL.

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to After Final Amendments Filed 6/10/05 and 6/27/05.
2. ☒ The allowed claim(s) is/are 2-4,6,7 and 9-16.
3. ☒ The drawings filed on 24 November 2004 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All b) ☐ Some\* c) ☐ None of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 6/23/05.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

## **DETAILED ACTION**

### ***Introduction***

1. Claims 2-4, 6-7, and 9-16 of U.S. Application 09/815,274 originally filed on 03/23/2001 are presented for examination. Claims 2, 3, 7, 9, 14, and 15 are independent.
2. The application claims foreign priority to U.K. Application 0007063 filed on 03/23/2000.
3. Claims 1, 5, 8, and 17 were previously cancelled.
4. Applicant's After Final Amendment filed on 6/10/2005 amended the claims, but did not overcome the existing 35 U.S.C. §101 rejections. In the Interview conducted on 6/23/2005, Examiner and Applicant's Representative discussed amendments that would overcome these rejections. The Supplemental After-Final Amendment dated 6/27/2005 contains amendments to the claims that overcome the 35 U.S.C. §101 rejections.

### ***EXAMINER'S AMENDMENT***

5. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.
6. Authorization for this examiner's amendment was given in a telephone interview with Mr. Gregory Walters, Reg. No. 41,366 on 6/28/05.

7. Claim 7 in the application has been amended as follows:

From:

---- A method of monitoring ... ----

To:

---- A computer implemented method of monitoring ... ----

***EXAMINER'S NOTICE OF REASONS FOR ALLOWANCE***

8. The following is an examiner's statement of reasons for allowance: Examiner indicated in the Final Office Action dated 3/14/2005 that Claims 2-4, 6-7 and 9-16 contain limitations that are not explicitly taught or rendered obvious in the cited prior art.
9. The closest relevant prior art is as follows:
- Wold et al., U.S. Patent 5,949,678. (Henceforth referred to as "**Wold**").
  - Kruger U., Desforges M.J., Lennox B., Sandoz D.J. "On the Application of Non-Linear Partial Least Squares to Industrial Process Control". DYMAC Conference, Manchester, U.K. September 1-3, 1999 (Henceforth referred to as "**Kruger**").
10. In regards to independent claim 2: while Wold and Kruger, in combination, teach other limitations of the claim, they do not teach (either individually nor in combination) the score matrix  $T_n$ , where  $T_n$  is determined from the formula  $T_n = T_n^\circ - E_n^\circ$ , where  $T_n^\circ$  provides the generalized t-scores, and  $E_n^\circ$  provides the

Art Unit: 2123

generalized residual scores. Moreover, neither Wold nor Kruger teach the formulas for  $T_n^\circ$  and  $E_n^\circ$  that are in the body of claim 2.

11. In regards to independent claim 3: while Wold and Kruger, in combination, teach other limitations of the claim, they do not teach (either individually nor in combination) the following combination of limitations:

- a first generalized score vector which describes any significant variation of the process including variations of the predictor and response variables,

- and a second generalized score vector which represents the prediction error of the partial least squares model and residuals of the predictor matrix, ...

- ... identifying abnormal process behavior, at least in part, by analyzing the residuals of the response variables.

12. In regards to independent claim 7: while Wold and Kruger, in combination, teach other limitations of the claim, they do not teach, either individually nor in combination, the following combination of limitations:

- ... wherein the statistical monitoring charts include:

- a T-squared monitoring chart representing variation of residuals of the response variables; and

- a Q monitoring chart representing at least variation of residuals of the response variables.

13. In regards to independent claim 14: while Wold and Kruger, in combination, teach other limitations of the claim, they do not teach (either individually nor in combination) the following combination of limitations:

- ... the creation of a first generalized score vector which describes any significant variation of the process including variations of the predictor and response variables, and a second generalized score vector which

represents the prediction error of the partial least squares model and residuals of the predictor matrix ...

... and the model configured to plot the first generalized score and the second generalized score over time to generate a monitoring chart for visual display, wherein the industrial process monitor is arranged to identify abnormal process behavior, at least in part, by analyzing the residuals of the response variables.

14. In regards to independent claim 15: while Wold and Kruger, in combination, teach other limitations of the claim, they do not teach (either individually nor in combination) the score matrix  $T_n$ , where  $T_n$  is determined from the formula  $T_n = T_n^\circ - E_n^\circ$ , where  $T_n^\circ$  provides the generalized t-scores, and  $E_n^\circ$  provides the generalized residual scores. Moreover, neither Wold nor Kruger teach the formulas for  $T_n^\circ$  and  $E_n^\circ$  that are in the body of claim 15.
15. All of the dependant claims depend from the independent claims
16. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Correspondence Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ayal I. Sharon whose telephone number is (571) 272-3714. The examiner can normally be reached on Monday through Thursday, and the first Friday of a biweek, 8:30 am – 5:30 pm.

Art Unit: 2123

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached at (571) 272-3749.

Any response to this office action should be faxed to (703) 872-9306, or mailed to:

USPTO  
P.O. Box 1450  
Alexandria, VA 22313-1450

or hand carried to:

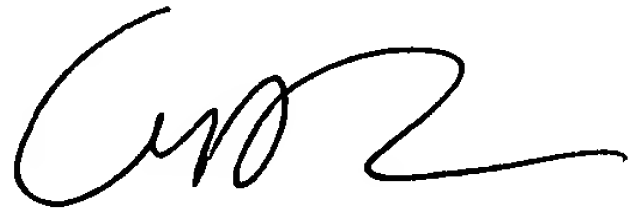
USPTO  
Customer Service Window  
Randolph Building  
401 Dulany Street  
Alexandria, VA 22314

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Tech Center 2100 Receptionist, whose telephone number is (571) 272-2100.

Ayal I. Sharon

Art Unit 2123

June 30, 2005

  
W. Hansen  
TC 2100  
AU 2123  
Rising Star